

### **REMARKS**

This paper is filed in response to the Office action mailed on October 9, 2007. In that Office action, claims 1-13 are rejected under 35 U.S.C. 103(a) as being purportedly obvious in view of prior art. Applicants respectfully disagree and request reconsideration in light of the following remarks.

#### **Claim Rejections – 35 U.S.C. 103**

In the outstanding Office action, claims 1, 2 and 5-13 stand rejected as being unpatentable over U.S. Patent No. 5,696,737 (“Hossack”) in view of U.S. Patent No. 5,721,710 (“Sallas”). Applicants believe that each of the pending claims includes one or more elements that are not disclosed by the combination of Hossack and Sallas, thereby overcoming the obviousness rejection, as discussed more specifically below

Independent claim 1, as well as claims 2-13 dependent thereon, specifies a method of determining impulse responses of a medium in relation to the transmission of waves between different points. Among other things, the method requires a step (a) of emitting waves into a medium by generating signals on the basis of a number of emission points included in the medium; a step (b) of receiving signals from the emitted waves after transmission in the medium at a number of reception points included in the medium; and a step (c) of determining the impulse responses between each emission and reception point on the basis of the emitted and received signals. Moreover, claim 1 requires calculation of each impulse response on the basis of a signal of correlation between the signal emitted at an emission point and the signal received at a reception point

According to page 4 of the Office action, the Examiner finds that the subject matter of claim 1 would distinguish over Hossack by the fact that it does not specifically disclose calculating the impulse responses from waves emitted and received in the medium. However, contrary to what is said by the Examiner, the subject matter of claim 1 further distinguishes over Hossack by additional differences. In the middle of page 3 of the Office action, the Examiner asserts that Hossack discloses a step (c) of using impulse responses  $h_{ij}(t)$  between each emission point  $i$  and each reception point  $j$ . However, Hossack in no way teaches a step of using impulse responses  $h_{ij}(t)$  between the emission points and reception points, except in a very indirect way

by the fact that a signal is transmitted between the emission points and the reception points. Additionally, according to claim 1, the different emission points emit signals at different respective frequencies and more precisely, the emission point  $i$  emits signals at respective frequencies  $f_{0,i} + k \delta f$ , where  $f_{0,i}$  are frequencies which are different from one emission point to another. All the frequencies  $f_{0,i}$  of emission point  $i$  are comprised in a frequency band of width  $\delta f$ , which implies that the set of frequencies emitted by each emission point  $i$  corresponds to a particular emission point  $i$ . Therefore, the subject matter of claim 1 is limited to a very particular orthogonal coding of the signals emitted by the different emission points, and no such coding is taught or even suggested by Hossack.

The Examiner further combines the teachings of Hossack with Sallas. Sallas teaches transmitting and receiving acoustic signals to determine impulse responses  $h_{ij}(t)$  between emission point  $i$  and reception point  $j$ . However, Sallas does not disclose a step of acquiring a whole set of impulse responses  $h_{ij}(t)$  in one sweep. On the contrary, Sallas emits the signals of the vibrators in a number of sweeps equal to the number of vibrators, as described in column 9, lines 21-26, or in a number of sweeps which is greater than the number of vibrators, as described in column 15, lines 64-66. Furthermore, Sallas does not teach the particular orthogonal coding of the emitted signals as claimed in claim 1, for example, using different frequencies  $f_{0,i} + k \delta f$  for each emission point  $i$  as mentioned above. As the combination of Hossack with Sallas fails to disclose each and every element of the pending claims at issue, applicants respectfully submit that the obviousness rejection must fail and should be withdrawn.<sup>1</sup>

Additionally, dependent claims 3 and 4 stand rejected as being unpatentable over Hossack in view of Sallas, and further in view of the IEEE July 1976 publication titled "Precise Impulse Response Measurement of SAW Filters" ("Panasik"). However, since the subject matter of claim 1 is not made obvious by the combination of Hossack and Sallas, and since Panasik does not disclose how to simultaneously obtain a set of impulse responses by using the particular orthogonal coding of the emitted signals as claimed in claim 1, the combination of

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<sup>1</sup> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations." MPEP §2143

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Hossack, Sallas and Panasik does not render claims 3 and 4 obvious. Applicants respectfully submit that the obviousness rejection of those claims must also fail and should be withdrawn.

### **CONCLUSION**

In light of the foregoing, applicants respectfully submit that each of the currently pending claims, i e. claims 1-13, are in a condition for allowance and respectfully solicit the same. If a telephone call would expedite prosecution of the subject application, the Examiner is invited to call the undersigned agent. The undersigned verifies that he is authorized to act on behalf of the assignee of the present application.

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Respectfully submitted,

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